IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:

BYOUNG-CHUL KIM *et al.*

Serial No.:	*to be assigned*	Examiner:	*to be assigned*
Filed:	20 January 2004	Art Unit:	*to be assigned*

For: DISTRIBUTED ROUTER FOR DYNAMICALLY MANAGING FORWARDING INFORMATION AND METHOD

INFORMATION DISCLOSURE STATEMENT

Mail Stop: Patent Application
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

In accordance with 37 C.F.R. §1.56, and §§1.97 and 1.98 as amended, Applicant cites and provides copies of the following art references:

1. U.S. Patent No. 6,643,292 to Chapman *et al.*, entitled *EFFICIENT PACKET DATA TRANSPORT MECHANISM AND AN INTERFACE THEREFOR*, issued on 4 November 2003;

2. U.S. Patent No. 6,584,093 to Salama *et al.*, entitled *METHOD AND APPARATUS FOR AUTOMATIC INTER-DOMAIN ROUTING OF CALLS*, issued on 24 June 2003;

3. U.S. Patent No. 6,574,669 to Weaver, entitled *METHOD AND APPARATUS FOR ROUTING TRAFFIC WITHIN A NETWORK UTILIZING LINEAR OPTIMIZATION*, issued on 3 June 2003;

4. U.S. Patent No. 6,473,408 to Rochberger *et al.*, entitled *BUILDING A HIERARCHY IN AN ASYNCHRONOUS TRANSFER MODE PNNI NETWORK UTILIZING PROXY SVCC-BASED RCC ENTITIES*, issued on 29 October 2002;

5. U.S. Patent No. 6,456,600 to Rochberger *et al.*, entitled *COMPLEX NODE REPRESENTATION IN AN ASYNCHRONOUS TRANSFER MODE PNNI NETWORK*, issued on 24 September 2002;

6. U.S. Patent No. 6,400,681 to Bertin *et al.*, entitled *METHOD AND SYSTEM FOR MINIMIZING THE CONNECTION SET UP TIME IN HIGH SPEED PACKET SWITCHING NETWORKS*, issued on 4 June 2002;

7. U.S. Patent No. 6,006,216 to Griffin *et al.*, entitled *DATA ARCHITECTURE FOR FETCH-INTENSIVE DATABASE APPLICATIONS*, issued on 21 December 1999;

8. U.S. Patent No. 5,629,930 to Beshai *et al.*, entitled *CALL ROUTING IN AN ATM SWITCHING NETWORK*, issued on 13 May 1997;

9. U.S. Patent No. 6,449,354 to Scott *et al.*, entitled *COMMUNICATION SYSTEM, ARTICLE AND METHOD OF CONFIGURING AND ESTABLISHING A CONNECTION THEREIN*, issued on 10 September 2002;

10. U.S. Patent No. 6,658,482 to Chen *et al.*, entitled *METHOD FOR SPEEDING UP INTERNET PROTOCOL ADDRESS LOOKUPS WITH EFFICIENT USE OF MEMORY*, issued on 2 December 2003;

11. U.S. Patent No. 6,658,481 to Basso *et al.*, entitled *ROUTER USES A SINGLE HIERARCHY INDEPENDENT ROUTING TABLE THAT INCLUDES A FLAG TO LOOK-UP A SERIES OF NEXT HOP ROUTERS FOR ROUTING PACKETS*, issued on 2 December 2003;

12. U.S. Patent No. 6,571,313 to Filippi *et al.*, entitled *MEMORY FOR INFORMATION SEARCH THROUGH PREFIX ANALYSIS, IN PARTICULAR FOR BUILDING ROUTING TABLES FOR NODES OF HIGH SPEED COMMUNICATION NETWORKS, SUCH AS THE INTERNET NETWORK*, issued on 27 May 2003;

13. U.S. Patent No. 6,563,823 to Przygienda *et al.*, entitled *MULTI-RESOLUTION TREE FOR LONGEST MATCH ADDRESS LOOKUPS*, issued on 13 May 2003;

14. U.S. Patent No. 6,490,592 to St. Denis *et al.*, entitled *METHOD OF AND APPARATUS FOR GENERATING A TREE DATA STRUCTURE SUPPORTING LONGEST MATCH LOOKUP*, issued 3 December 2002;

15. U.S. Patent No. 6,266,706 to Brodnik *et al.*, entitled *FAST ROUTING LOOKUP SYSTEM USING COMPLETE PREFIX TREE, BIT VECTOR, AND POINTERS IN A ROUTING TABLE FOR DETERMINING WHERE TO ROUTE IP DATAGRAMS*, issued 24 July 2001;

16. U.S. Patent No. 6,243,720 to Munter *et al.*, entitled *ADDRESS TRANSLATION METHOD AND SYSTEM HAVING A FORWARDING TABLE DATA STRUCTURE*, issued 5 June 2001;

17. U.S. Patent No. 6,192,051 to Lipman *et al.*, entitled *NETWORK ROUTER SEARCH ENGINE USING COMPRESSED TREE FORWARDING TABLE*, issued 20 February 2001;

18. U.S. Patent No. 6,335,926 to Silton *et al.*, entitled *DYNAMIC CONFIGURATION OF EDGE FORWARDERS TO ROUTE SERVERS IN A DISTRIBUTED ROUTER SYSTEM*, issued 1 January 2002;

19. U.S. Patent No. 6,249,820 to Dobbins *et al.*, entitled *INTERNET PROTOCOL (IP) WORK GROUP ROUTING*, issued 19 June 2001;

20. U.S. Patent No. 6,205,488 to Casey *et al.*, entitled *INTERNET PROTOCOL VIRTUAL PRIVATE NETWORK REALIZATION USING MULTI-PROTOCOL LABEL SWITCHING TUNNELS*, issued 20 March 2001;

21. U.S. Patent No. 5,790,541 to Patrick *et al.*, entitled *APPARATUS METHOD, SYSTEM AND SYSTEM METHOD FOR DISTRIBUTED ROUTING IN A MULTIPOINT COMMUNICATION SYSTEM*, issued 4 August 1998;

22. U.S. Patent No. 5,751,971 to Dobbins *et al.*, entitled *INTERNET PROTOCOL (IP) WORK GROUP ROUTING*, issued 12 May 1998.

23. U.S. Patent Application No. 10/724,085 to Kim et al., entitled *DYNAMIC MANAGEMENT METHOD FOR FORWARDING INFORMATION IN ROUTER HAVING DISTRIBUTED ARCHITECTURE*, filed on 1 December 2003.

24. BGP Table Data of Active BGP Entries and BGP Reports, Report last updated at Tue, 25 Nov 2003 4:1:12 UTC+1100, http://bgp.potaroo.net/.

DISCUSSION

Chapman *et al.* U.S. '292 suggests a packet transport network with a plurality of routing nodes, each having a routing table, for routing transport packets through routing links, and a plurality of transport access interfaces each of which has an address table correlating destination of the customer digital data with addresses of transport access interfaces. Interface includes an encapsulation module for encapsulating one or more of the identified incoming digital data flows into a stream of transport packets.

Salama *et al.* U.S. '093 assumes a valid IP telephone destination address, and selects the best path towards the destination address, by advertising the accessability of the IP telephone addresses and the costs associated with access, and selects the best route towards a particular IP telephone designation with a Border Gateway Protocol providing a mechanism for exchanging IPv4 routing information.

Weaver U.S. '669 links routing traffic within a network including a plurality of nodes coupled by links, with a linear optimization operation that uses a set of metrics to determine respective traffic flow values.

Rochberger *et al.* U.S. '408 contemplates a dedicated computer with a step of configuring the dedication of the computer to perform calculations of logical group node, including the complex node representation calculations at all levels in the hierarchy, or changes in any child peer groups that cause the recalculation of the complex logical group node do not consume computing resources from any non-dedicated switches that continue to create and delete switched virtual circuit (SVCs).

Rochberger *et al.* U.S. '600 suggested the method of calculating a complex node

representation for logical node in a hierarchical peer group in a PNNI based ATM network, using average to determine the summary information used in a representation of the complex nodes. A list of all border nodes in the peer group is generated, and maintained in order to generate a matrix of table, with one table for each metric per class of service. The table is populated by the best value associated with the corresponding metric for a particular pair of border nodes within a particular class of service. The default spokes are determined, exceptions and bypasses are calculated.

Bertin *et al.* U.S. '681 suggests a high speed, highly dynamic network using a path selection algorithm embodying to minimize the connection set-up delay in access nodes. Pre-calculated path is removed from the routing database after predetermined period of time has path without selection of the removed path.

Griffin *et al.* U.S. '216 mentions a data organization used to meet specific requirements of fetch-intensive (OLFP) database applications maintained in at least two logical databases. The databases, with OLFP applications update transactions directed to the first logical database and OLFP application read transaction directed to the second logical databases. The first databases substantially normalized.

Beshai *et al.* U.S. '930 contemplates selection of candidate route path from the originating node to the destination node and if no direct route paths are available, selecting two-link route path in an ATM network having a plurality of nodes with each node having one message queue for each of its outgoing links and candidate table containing a list of candidate route path, with each node performing independently from each other without conflict.

Scott *et al.* U.S. '354 provides a call server for overseen connection between a call and node

providing a connection interface, by establishing a routing object index associated with an object in response to a first configuration message and storing an information containing the first configuration message as a partial object.

Chen *et al.* '482 contemplates the establishment of a Prefix Information Table corresponding to a subtree expanding from a node on the Trie, and a second Prefix Information Table corresponding to a subtree expanding from a node on a different level of the Trie, for partitioning the Trie into several segments to map all of the IP addresses. Best Matching Prefix (BMP) is performed for the Internet Protocol address through the two Prefix Information Tables.

Basso *et al.* '481 describes, in its Background discussion, two router look-up tables that include a BGP protocol table for autonomous networks and a packet forwarding table for listing subnet addresses and subsequent "next hop addresses for all routers connected to the autonomous network. Basso *et al.* '481 contemplates a hierarchy independent routing forwarding table that is implemented in the network processor-based routing devices.

Filippi *et al.* '313 discusses the memory size and search complexity that leads to a reduction of access time to large memories using search criteria known as the "longest prefix match."

Przygienda *et al.* '823 discusses longest prefix matching, whereby an address for a packet received is matched with a longest prefix stored in a routing table, a decisional value is associated with the longest prefix, and the packet is forwarded in accordance with the decisional value. When matching the address with the longest stored prefix, a current partition member is first initialized, the address is translated into a p-structure index using partition information stored in the current partition number, the decisional value associated with the indexes stored, a test is made to determine

if there is a pointer associated with the index, and if a pointer is associated with the index, the current partition member is set to a next partition member associated with the pointer, and the process is repeated until no more pointers are associated with the last index.

St. Denis *et al.* '592 describes a multi-way tree data structure that supports a longest match lookup, and new data elements may be inserted into a data structure formed of a plurality of records that includes at least a root record. Each of the records includes at least one node and at least one pointer that points to another of the records or to a null value. Selective removal of data elements from the linked structure is contemplated.

Brodnik *et al.* '706 provides an IP routing lookup in a routing table containing entries of arbitrarily long prefixes associated with next-hop information in a next-hop table, by storing a representation of the routing table in the form of a complete prefix tree having either no or two children.

Munter *et al.* '720 describes an address translation system with a data structure composed of information resident in a routing table and a plurality of sets of data records each including a pointer and an action indicator with a selected one of the data records being designated as a root object and being assigned to a lowest level in a tree structure.

Lipman *et al.* '051 describes a network router apparatus employing a multi-level prefix tree as a forwarding table, with a first-level tree directly addressed by a first field of a network address, and with compression achieved by providing for the storage of either dents or sparse trees at other levels.

Silton *et al.* '926 provides a communication network enabling internetworking service over

a non-broadcast multi-access network in a distributed routing system, with a plurality of "routing means" to generate and download forwarding tables "respecting traffic through the network", in combination with a plurality of configuration servers that dynamically configure interactivity between the routing servers and the forwarding tables.

Dobbins *et al.* '820 routes data between a source node and a destination node of an IP communication network including routers having multiple router interfaces that connect multiple physical networks, by assigning multiple router interfaces to the same IP workgroup address, in an effort to enhance host mobility by allowing a host to be relocated anywhere in the workgroup without requiring reconfiguration of the host.

Casey *et al.* '488 describes a virtual private network that enables private communications over a shared multi-protocol label switching network, between at least two private networks that are configured to dynamically distribute virtual private network information across the shared MPLS network.

Patrick *et al.* '541 describes a distributed internetwork routing of information using a topology with a primary node connected to a first network such as the Internet, and connected via an intermediate network to a multiplicity of secondary nodes that are further connected via a secondary network to a plurality of terminals. Conservation of internetwork addresses is contemplated by using internetworking addresses only for the primary node and for the terminals.

Dobbins *et al.* '971 contemplates an IP workgroup with multiple router interfaces assigned the same IP network address in an effort to enhance host mobility by allowing the host to be relocated anywhere in the workgroup without reconfiguration of the host.

Also, in accordance with a duty of disclosure, the Examiner is respectfully advised of U.S. Patent Application Serial No. - 10/724,085 - to BYOUNG-CHUL KIM *et al.*, entitled *DYNAMIC MANAGEMENT METHOD FOR FORWARDING INFORMATION IN ROUTER HAVING DISTRIBUTED ARCHITECTURE,* which is concurrently filed with this application (Application as filed). In accordance with 37 C.F.R. §1.98, a copy of the U.S. Patent Application and the documents identified above in relation thereto, are provided to the Examiner with this Information Disclosure Statement. However, as to U.S. Application Serial No. - 10/724,085 - to BYOUNG-CHUL KIM *et al.*, entitled *DYNAMIC MANAGEMENT METHOD FOR FORWARDING INFORMATION IN ROUTER HAVING DISTRIBUTED ARCHITECTURE,* which is concurrently filed with this application, the application is ***to be maintained confidential*** and no waiver of the statutory right of secrecy in the application is implied by their disclosure in this Information Disclosure Statement.

The citation of the foregoing references is not intended to constitute an assertion that other or more relevant art does not exist. Accordingly, the Examiner is requested to make a wide-ranging and thorough search of the relevant art.

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /K.H.S./

/Kyung Hye Shin/ 10/13/2008

No fee is incurred by this Statement.

Respectfully submitted,

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INFORMATION DISCLOSURE STATEMENT PTO-1449 (PAGE 1 OF 2)	SERIAL NUMBER *to be assigned*	DOCKET NO. P57009
	APPLICANT BYOUNG-CHUL KIM *et al.*	
	FILING DATE January 20, 2004	GROUP *to be assigned*

U.S. PATENT DOCUMENTS

EXAMI	DOCUMENT NUMBER	DATE	NAME	CLASS	SUBCLASS	FILING DATE
	6,643,292	11/03	Chapman *et al.*			
	6,584,093	06/03	Salama *et al.*			
	6,574,669	06/03	Weaver			
	6,473,408	10/02	Rochberger *et al.*			
	6,456,600	09/02	Rochberger *et al.*			
	6,400,681	06/02	Bertin et al.			
	6,006,216	12/99	Griffin *et al.*			
	5,629,930	05/97	Beshai *et al.*			
	6,449,354	09/02	Scott *et al.*			
	6,658,482	12/03	Chen *et al.*			
	6,658,481	12/03	Basso *et al.*			
	6,571,313	05/03	Filippi *et al.*			
	6,563,823	05/03	Przgienda *et al.*			
	6,490,592	12/02	St. Denis *et al.*			
	6,266,706	07/01	Brodnik *et al.*			
	6,243,720	06/01	Munter *et al.*			
	6,192,051	02/01	Lipman *et al.*			
	6,335,926	01/02	Silton *et al.*			
	6,249,820	06/01	Dobbins *et al.*			
	6,205,488	03/01	Casey *et al.*			
	5,790,541	08/98	Patrick *et al.*			
	5,751,971	05/98	Dobbins *et al.*			
	U.S. Patent Application No. 10/724,085		BYOUNG-CHUL KIM et al. (U.S. Patent application based on Korean patent application No. 2002-75701 filed on 30 November 2002)			

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /K.H.S./

INFORMATION DISCLOSURE STATEMENT PTO-1449 (PAGE 2 OF 2)	SERIAL NUMBER *to be assigned*	DOCKET NO. P57009
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FOREIGN PATENT DOCUMENTS						TRANSLATION	
	DOCUMENT	DATE	COUNTRY	CLASS	SUBCLASS	YES	NO
OTHER DOCUMENTS *(Including Author, Title, Date, Pertinent Pages, etc.)*							
	BGP Table Data of Active BGP Entries and BGP Reports, Report last updated at Tue, 25 Nov 2003 4:1:12 UTC+1100, http://bgp.potaroo.net/.						

EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP §609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /K.H.S./

/Kyung Hye Shin/ 03/09/2008